

**IDAHO NATIONAL GUARD MATES FACILITY (PWS #4010234)  
SOURCE WATER ASSESSMENT OPERATOR FINAL REPORT**

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**April 3, 2002**



**State of Idaho  
Department of Environmental Quality**

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## Executive Summary

Under the federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. The assessment for your particular system is based on a land use inventory of the designated source water area, sensitivity factors associated with each well, and characteristics of the aquifer that supplies your community with drinking water.

This report, *Source Water Assessment for the Idaho National Guard Mates Facility, located near Orchard, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within those boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Idaho National Guard Mates Facility (PWS #4010234) drinking water system consists of a single well source. Well #1 rated an overall moderate susceptibility to inorganic compounds (IOCs), volatile organic compounds (VOCs), synthetic organic compounds (SOCs), and microbial contaminants. These ratings are the result of a moderate system construction score, combined with a moderate hydrologic sensitivity score. According to the Idaho National Guard Mates Facility well log, the well was soundly constructed in 1992, which tended to lower the overall susceptibility ratings. In addition, the well is located in an area of few potential contaminant sources (Table 1, page 18).

The primary water quality issue currently facing the Idaho National Guard Mates Facility is the relatively frequent detection of bacteria within the water system. The most recent incident occurred in June of 2001, when total coliform bacteria were discovered in five samples collected from throughout the distribution system. Each of these five samples also tested positive for *E. coli*. The presence of bacteria within the drinking water supply, especially *E. coli*, constitutes a public health threat. Drinking water contaminated with these organisms could result in a severe gastrointestinal illness. The Idaho National Guard Mates Facility water system may want to investigate disinfection practices to avoid future maximum contaminant level (MCL) violations and protect public health.

Total coliform bacteria and *E. coli* have also been detected in the water system in six additional samples since 1998. Because each of these positive samples was obtained from the distribution system, it can be hypothesized that the bacteria are originating from a problem somewhere within the distribution system itself and not from a contaminated ground water supply.

No VOCs or SOCs have ever been discovered in the well. The IOCs arsenic, chromium, fluoride, and nitrate have been detected in routine samples, but at levels safely below each respective MCL, as established by the EPA. Nitrate levels have been very low, averaging 0.63 parts per million (ppm) since 1997.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality

in the future is to act now to protect valuable water supply resources.

For the Idaho National Guard Mates Facility, drinking water protection activities should first focus on continued maintenance of the sanitary seal and distribution system. Actions should also be taken to keep a 50-foot radius circle clear around the wellhead. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

Any spills occurring on Range Road should be monitored and dealt with expeditiously. The waste petroleum land farm may also need to be monitored to determine whether it could be leaching contaminants into the aquifer. In addition, because a portion of the ground water capture zone is outside the direct jurisdiction of the Idaho National Guard Mates Facility, the creation of partnerships with state and local agencies are critical to the success of drinking water protection.

The system may also wish to implement disinfection practices to eliminate bacteria from the drinking water supply. The 50,000-gallon drinking water storage tank should also be inspected and cleaned. The buildup of sediment in this storage tank could be the source of bacteriological contamination, as indicated in the 1998 Sanitary Survey performed by DEQ.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan, especially since the delineation contains some urban and residential land uses. Public education topics could include proper lawn care practices, household hazardous waste disposal methods, and the importance of water conservation to name but a few.

There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. In addition, because a transportation corridor (Range Road) passes through the delineation, the Idaho Department of Transportation should be involved in any protection measures. Drinking water protection practices dealing with agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Elmore Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community should incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, water conservation, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of DEQ at 373-0550 or the Idaho Rural Water Association at 1-800-962-3257.

# SOURCE WATER ASSESSMENT FOR THE IDAHO NATIONAL GUARD MATES FACILITY, ORCHARD, IDAHO

## Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this assessment means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are contained in this report (Attachment A, pages 15-18). The list of significant potential contaminant source categories and their rankings used to develop the assessment is also attached.

### Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess each drinking water source in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act Amendments of 1996. This assessment is based on a land use inventory of the delineated source water area, sensitivity factors associated with each well, and aquifer characteristics. Since there are over 2,900 public water sources in Idaho, there is limited time and resources available to accomplish the assessments. All of these assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. DEQ recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

## Section 2. Conducting the Assessment

### General Description of the Source Water Quality

Idaho National Guard Mates Facility has a non-community non-transient public drinking water system serving approximately 60 people that is located in Ada County just south of Range Road, near Orchard, Idaho (Figure 1, page 16). Residents receive their water from a single well.

The primary water quality issue currently facing the Idaho National Guard Mates Facility is the relatively frequent detection of bacteria within the water system. The most recent incident occurred in June of 2001, when total coliform bacteria were discovered in five samples collected from throughout the distribution system. Each of these five samples also tested positive for *E. coli*. The presence of bacteria within the drinking water supply, especially *E. coli*, constitutes a public health threat. Drinking water contaminated with these organisms could result in a severe gastrointestinal illness. The Idaho National Guard Mates Facility water system may want to investigate disinfection practices to avoid future MCL violations and protect public health.

Total coliform bacteria and *E. coli* have also been detected in the water system in six additional samples since 1998. Because each of these positive samples was obtained from the distribution system, it can be hypothesized that the bacteria are originating from a problem somewhere within the distribution system itself and not from a contaminated ground water supply.

No VOCs or SOCs have ever been discovered in the well. The IOCs arsenic, chromium, fluoride, and nitrate have been detected in routine samples, but at levels safely below each respective MCL, as established by the EPA. Nitrate levels have been very low, averaging 0.63 ppm since 1997.

### **Defining the Zones of Contribution – Delineation**

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (regions indicating the number of years necessary for a particle of water to reach a pumping well) for water in the aquifer. DEQ contracted with BARR Engineering to perform the delineations using a combination of MODFLOW and a refined analytical element computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Mountain Home Plateau aquifer. The computer model used site specific data, assimilated by BARR Engineering from a variety of sources including the Idaho National Guard Mates Facility well log, other area well logs, and hydrogeologic reports on the Mountain Home Plateau Aquifer (detailed below in Section 3).

### **Identifying Potential Sources of Contamination**

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to

the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with these possible contamination sources, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

### **Contaminant Source Inventory Process**

A two-phased contaminant inventory of the study area was conducted in October and November of 2001. The first phase involved identifying and documenting potential contaminant sources within the Idaho National Guard Mates Facility source water assessment area (Figure 2, page 17) through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the system representative, Major Tom Rasmussen, to validate the sources identified in phase one and to add any other potential sources in the area.

The delineated source water area contains very few potential contaminant sources of concern. According to the 1998 Sanitary Survey performed by DEQ, there is a waste petroleum land farm located just north of Range Road, approximately 300 feet from the wellhead. This site was incorporated into the susceptibility analysis as a potential source of VOCs and SOCs. In addition, Range Road passes directly through the delineated drinking water capture zone. Because Range Road serves as an important transportation thoroughfare for the region, it was considered a potential source of contamination for all classes of pollutants.

## **Section 3. Hydrologic Conditions of the Mountain Home Plateau**

The Mountain Home Plateau is a broad, flat plateau, which slopes gently towards the southwest. The plateau is broken by volcanic structures – crater rings, cinder cones, and shield volcanoes. The plateau generally is above 3,000 feet in altitude, except in the extreme western part. All streams draining the plateau are ephemeral, flowing south toward the Snake River. The larger streams draining the Danskin Mountains to the north are fed by springs in the Tertiary volcanics and Cretaceous granites. Characterized by hot, dry summers and cold winters, the climate of the plateau is semi-arid. Average annual precipitation ranges from nine inches on the plateau to about 23 inches in the mountains (Norton et al., 1982).

The major geologic units in the Mountain Home Plateau are: 1) alluvium and younger terrace gravels, 2) Snake River Group, 3) Idaho Group, 4) Idavada Volcanics, and 5) Idaho Batholith. The basalts are considerable thicker in the northern section of the study area. Two of the formations of the Idaho Group, the Glens Ferry Formation and the Bruneau, are the main aquifer systems (Ralston and Chapman, 1968). The basalts of the Bruneau Formation thin rapidly to the east and to the south. Two parallel northwest trending faults cut through the area. An apparent third fault, trending east from Cinder Cone Butte, bisects one of the northwest faults near Cleft. Several volcanic structures are present on the plateau including Crater Rings, Cinder Cone Butte, and Lockman Butte (Norton et al., 1982). There are two main aquifers in the Mountain Home area: 1) a shallow, perched system beneath Mountain Home and 2) a deeper, regional system.

The perched system underlies approximately 38,000 acres extending from about 10 miles south to 4

miles north of the City of Mountain Home with a 4 mile width in the area of the City (Young, 1977). For the most part, ground water in the perched system is in the clay, silt, sand, and gravel layers of the Quaternary Alluvium. Depth to water in the shallow system can be less than 10 feet but varies considerably along the limits of the perched system as the water moves vertically down the regional system (Norton et al., 1982). Recharge to the perched system occurs from Rattlesnake and Canyon Creeks as well as seepage from Mountain Home Reservoir and the canals and laterals that distribute the water. Natural discharge from the perched system occurs mainly as downward percolation to the regional system and as spring flow at Rattlesnake Spring near the Snake River Canyon rim. The direction of flow in the perched ground water system is towards the southwest.

The deeper, regional aquifer supplies ground water to the large irrigation wells and municipal wells for Mountain Home and the Air Force base. The major rock types are basalts of the Bruneau Formation, Idaho Group, and poorly consolidated detrital material and minor basalt flows of the Glenns Ferry Formation, Idaho Group. Well yields from the basalts of the Bruneau Formation range from 10 to 3500 gallons per minute (gpm). The range of the well yields for the Glenns Ferry Formation is 3 to 350 gpm. The Bruneau Formation thins rapidly towards the east where the Glenns Ferry Formation becomes the major source of ground water (Norton et al., 1982).

The Glenns Ferry Formation, a thick intertonguing deposit of lake and stream sediments, is the primary aquifer in the eastern portion of the area. Due to the fine-grained nature of the sediments, the permeability and yield to wells is generally low. The formation is composed of tan, gray, and white clay, silt, and fine to medium sand (Ralston and Chapman, 1968). The formation has been noted as being 2000 feet thick near Glenns Ferry (Malde and Powers, 1962).

The sediments and basalt of the Bruneau Formation are the primary aquifers in the Mountain Home area. The jointing, fracturing, and vesicular character of the basalts cause them to be very permeable. The majority of ground water withdrawal from the formation is from deeper interflow zones and a thin but extensive series of sand beds just below the lower basalt unit. The unit has approximately 1500 feet of lake and stream sediments with numerous basalt interbeds. The basalts tend to be dark gray to black when fresh but weather to a reddish gray-brown color. Most of the interflow zones contain large quantities of glassy cinders and some ash (Ralston and Chapman, 1968).

Ralston and Chapman (1968 and 1970) found that recharge to the ground water system in the eastern portion of the Mountain Home Plateau is limited due to low amounts of precipitation, relatively impermeable material in the area of most precipitation, and high evapotranspiration rates. Recharge to the regional system occurs as downward percolation of precipitation that falls on the mountains, losses from intermittent stream flows, and from downward percolation from the perched system. Discharge from the regional system occurs as spring flow, underflow to the Snake River, and pumpage.

In general, the direction of ground water flow is towards the southwest with a southern component in the southeast and a western component in the northwest. Low permeability along the apparent east-west trending fault through Cleft limits the flow to the north. The ground water elevation is 70 to 165 feet higher on the south side of the fault (Norton et al., 1982).

The delineated source water assessment area for the Idaho National Guard Mates Facility can best be described as an eastward trending corridor approximately 600 feet long and 450 feet wide (Figure 2, page 17). The actual data used by BARR Engineering in determining the source water zones of

contribution are available from DEQ upon request.

## **Section 4. Susceptibility Analysis**

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment B contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

### **Hydrologic Sensitivity**

The hydrologic sensitivity of a well is dependent upon four factors: 1) the surface soil composition, 2) the material in the vadose zone (region between the land surface and the water table), 3) the depth to first ground water, and 4) the presence of a 50-foot thick impermeable zone above the production interval of the well. Slowly draining fine-grained soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. For the Idaho National Guard Mates Facility, regional soil information indicates the presence of moderate to well draining soils within the delineated drinking water capture zone. These soils, in general, provide less protection to the ground water by allowing for a more rapid downward movement of contaminants in the unlikely event of a spill or release in the vicinity.

Hydrologic sensitivity is high for the well (Table 2, page 10). According to the Idaho National Guard Mates Facility well log, the vadose zone is composed primarily of fractured volcanic materials, including cinders and various types of lava, which are generally quite porous in nature. However, the well log also indicated that the distance to first ground water is 479 feet below ground surface. Therefore, any contaminants would have to travel a relatively long distance to potentially impact the drinking water supply. Although the vadose zone is quite sizeable, the well log gave no evidence of an aquitard, or low permeability layer, that could impede the downward progress of any leaching pollutants. As a result, the hydrologic sensitivity score was determined to be high.

### **Well Construction**

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have a better buffering capacity. In addition, if the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less



probable. Also, if the wellhead is protected from surface flooding and is outside the 100-year floodplain, then the likelihood of contamination from surface events is reduced. A well log was available for Well #1 and the information it provided is summarized below.

**Table 3. Idaho National Guard Mates Facility Well Construction Summary Information**

Well	Well Depth (ft)	Static Water Depth (ft)	Casing: diameter/ thickness (in)	Casing: Depth (ft)/ formation completed in	Surface seal: depth (ft)/ formation completed in	Screened Interval (ft)	Drill Year	Sanitary Survey Elements (A/B) <sup>1</sup>
Well #1	753	479	16 / 0.375 12 / 0.375	16"- 56 / Firm Brown Lava  12"- 680 / Olivine	56 / Firm Brown Lava	NI	1992	Y/Y

<sup>1</sup> A = Well and surface seal in compliance; B = Protected from surface flooding  
NI = no information was available

The available well log allowed a determination as to whether the well meets current public water system (PWS) construction standards. Although the well may have been in compliance with all regulations when it was completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the regulations deal with screening requirements, aquifer pump tests, and thickness of casing. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. 12-inch and larger casing requires a casing thickness of at least 0.375-inches. Well #1 used 0.375-inch thick casing and therefore it is in compliance with the current construction standards.

The Idaho National Guard Mates Facility well rated a moderate system construction score. According to the well log, the well was completed in April of 1992. The highest production interval of the well is at 592 feet below ground surface, which is the position of a submersible pump. This depth is greater than 100 feet below the static water level of 479 feet, and therefore, the system construction score was slightly reduced. In addition, the 1998 Sanitary Survey performed by DEQ indicates that the well's surface seal was in good condition and should provide an adequate initial barrier to precipitation and other surface events. As a result, the system construction score was reduced to moderate.

### **Potential Contaminant Source and Land Use**

In terms of the potential contaminant source/land use score, the well rated low for IOCs (i.e. nitrates, arsenic), VOCs (i.e. petroleum products), SOCs (i.e. pesticides) and microbial contaminants (i.e. bacteria). These ratings can be attributed, in large part, to the lack of potential contaminant sources within the delineated drinking water capture zone. The two sources that were incorporated into the susceptibility analysis can be found in Table 1 (page 18).

### **Final Susceptibility Ranking**

A detection above a drinking water standard MCL, any detection of a VOC or SOC, or a repeat detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination

already exists. Additionally, potential contaminant sources within 50 feet of a wellhead will lead to an automatically high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time of travel zone (Zone 1B) and the presence of agricultural land contribute greatly to the overall ranking. The Idaho National Guard Mates Facility water system rated a moderate overall susceptibility to all classes of contaminants (Table 2, page 10).

**Table 2. Summary of the Idaho National Guard Mates Facility Susceptibility Evaluation**

Well	Susceptibility Scores <sup>1</sup>									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	L	L	L	L	M	M	M	M	M

<sup>1</sup>H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,  
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

### Susceptibility Summary

A high hydrologic sensitivity and moderate system construction combined to give the well a moderate overall rating for all classes of contaminants even though few potential contaminant sources exist in the 3-year TOT zone. Though there have been no significant water chemistry problems in the ground water, the presence of bacteria within the distribution system constitutes a public health threat. The Idaho National Guard Mates Facility may want to investigate disinfection practices that could help to protect the health of its residents.

## Section 5. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Idaho National Guard Mates Facility, drinking water protection activities should first focus on continued maintenance of the sanitary seal and distribution system. Actions should also be taken to keep a 50-foot radius circle clear around the wellhead. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

Any spills occurring on Range Road should be monitored and dealt with expeditiously. The waste petroleum land farm may also be monitored to determine whether it could be leaching contaminants

into the aquifer. In addition, because a portion of the ground water capture zone is outside the direct jurisdiction of the Idaho National Guard Mates Facility, the creation of partnerships with state and local agencies are critical to the success of drinking water protection.

The system may also wish to implement disinfection practices to eliminate bacteria from the drinking water supply. The 50,000-gallon storage tank on-site should also be inspected and cleaned. The buildup of sediment in this storage tank could be the source of bacteriological contamination, as indicated in the aforementioned Sanitary Survey.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan, especially since the delineation contains some urban and residential land uses. Public education topics could include proper lawn care practices, household hazardous waste disposal methods, and the importance of water conservation to name but a few.

There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. In addition, because a major transportation corridor (Range Road) passes through the delineation, the Idaho Department of Transportation should be involved in any protection measures. Drinking water protection practices dealing with agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Elmore Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

### **Assistance**

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Boise Regional DEQ Office                      (208) 373-0550

State DEQ Office                                      (208) 373-0502

Website: <http://www2.state.id.us/deq>

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with drinking water protection (formerly wellhead protection) strategies.

## POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund, is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

## References Cited

- Clemens, D.M., 1993. Volcanic stratigraphy and tectonic development, Western Snake River Plain, Idaho. M.S. Thesis, Arizona State University.
- Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."
- Idaho Department of Agriculture, 1998. Unpublished Data.
- Idaho Department of Environmental Quality, 1995. Ground water Under Direct Influence (GWUDI) Field Survey Report.
- Idaho Department of Environmental Quality, 1998. Sanitary Survey Report for the Idaho National Guard Mates Facility.
- Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.
- Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.
- Malde, H.E., 1991. Quaternary geology and structural history of the Snake River Plain, Idaho and Oregon. In: The Geology of North America, Quaternary Nonglacial Geology: Conterminous U.S., Vol. K-2, 252-281 pp.
- Malde, H.E. and H.A. Powers. 1962. *Upper Cenozoic stratigraphy of western Snake River Plain, Idaho*. Geological Society of America Bulletin. v.73. pages 1197-1220.
- Neely, K.W. and J.K. Crockett, 1998. "Ground Water Quality Characterization and Initial Trend Analyses for the Treasure Valley Shallow and Deep Hydrogeologic Subareas," Idaho Department of Water Resources, Water Information Bulletin No. 50, Part 3.
- Norton, M.A., W. Ondrechen, and J.L. Baggs. 1982. *Ground Water Investigation of the Mountain Home Plateau, Idaho*. Idaho Department of Water Resources. Open File Report August 1982.
- Ralston, D.R. and S.L. Chapman. 1968. *Ground Water Resources in the Mountain Home Area, Elmore County, Idaho*. Idaho Department of Reclamation. Water Information Bulletin #4. 63 pages.
- Ralston, D.R. and S.L. Chapman. 1970. *Ground Water Resources of Southern Ada County and Western Elmore County, Idaho*. Idaho Department of Reclamation. Water Information Bulletin #15. 52 pages.
- Wood, S.H., 1994. Seismic expression and geological significance of a lacustrine delta in Neogene deposits of the Western Snake River Plain, Idaho. AAPG Bulletin, 1(January): p. 102-121.

Wuolo, R.W., J. Wittman, and D.M. Reynolds, 2001. "Summary Report: Delineation of Public Drinking Water Sources for the Source Water Assessment Program: Boise Valley and Mountain Home Plateau," BARR, Minneapolis, August 2001.

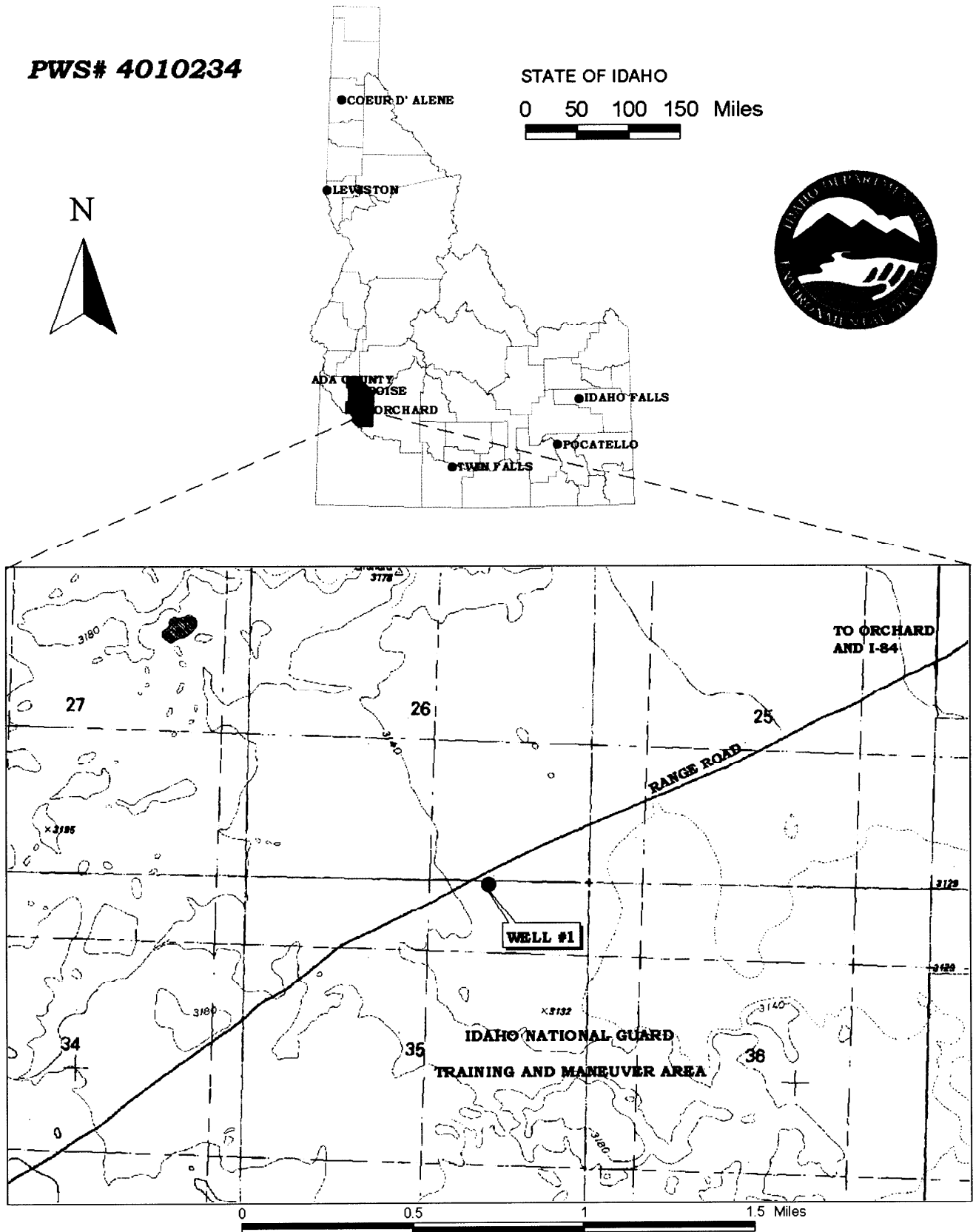
Young, H.W. 1977. *Reconnaissance of Ground Water Resources in the Mountain Home Plateau Area, Southwest Idaho*. U.S. Geological Survey. Water Resources Investigations 77-108, Open File Report. 40 pages.

## Attachment A

### Delineation Figures and Potential Contaminant Source Tables for Idaho National Guard Mates Facility

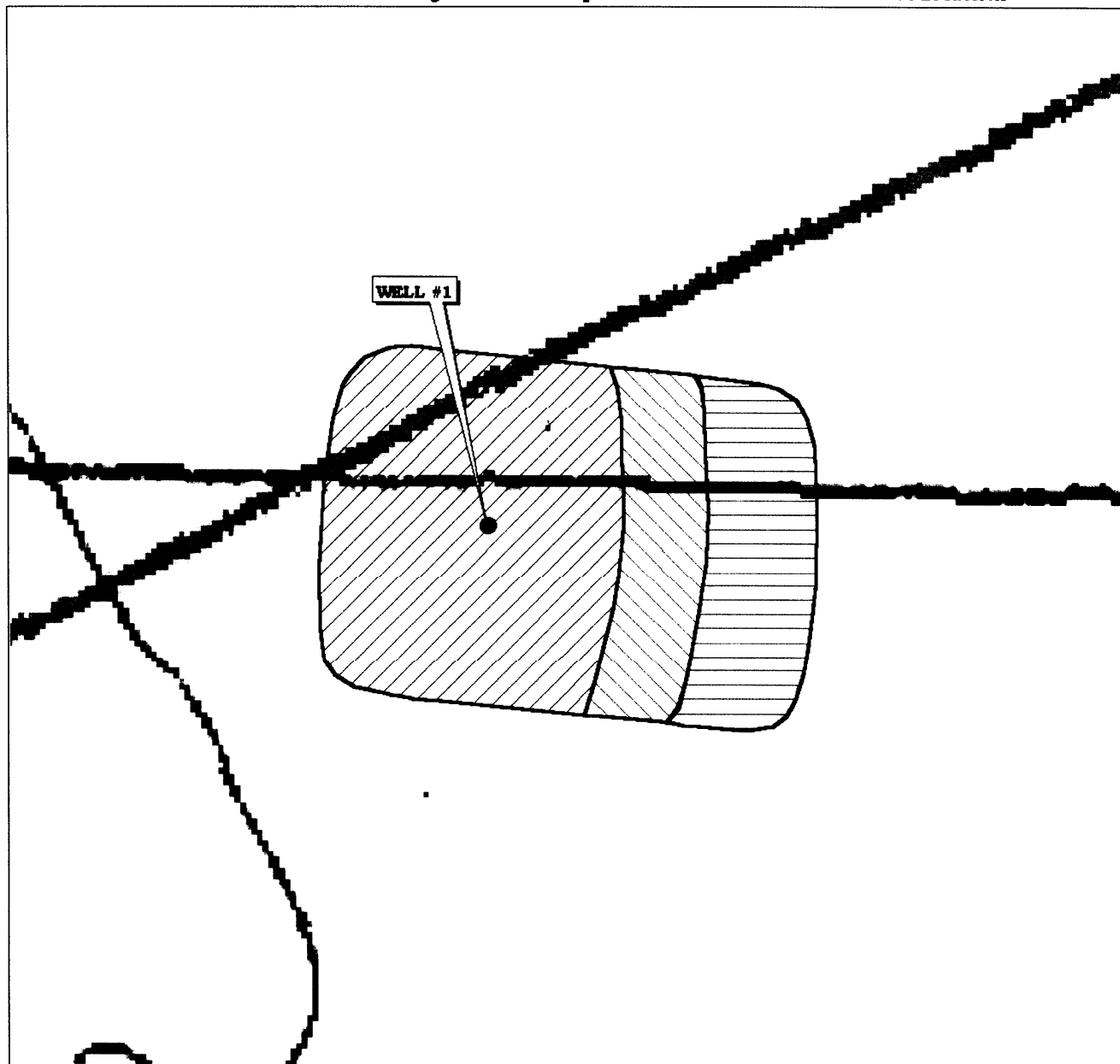
**FIGURE 1: Location of the Idaho National Guard Mates Facility**

**PWS# 4010234**





**FIGURE 2 - Idaho National Guard Mater. Facility Delineation Map and Potential Contaminant Source Locations**



0 0.1 0.2 Miles

**Time of Travel Zones**

- 1B (3 yr TOT)
- 2 (6 yr TOT)
- 3 (10 yr TOT)



Enhanced Inventory



Toxic Release Inventory



CERCLIS Site



RICRIS Site



Business Mailing List



Dairy



LUST Site



NPDES Site



Mine



AST



UST Site



Closed



Open



Recharge Point



SARA Title III Site (EPCRA)



Injection Well



Group1 Site



Cyanide Site



Landfill



Wastewater Land App.Site

N



**PWS# 4010234**  
**WELL# 1**

**Table 1. Idaho National Guard Mates Facility Potential Contaminant Inventory**

SITE #	Source Description <sup>1</sup>	TOT Zone <sup>2</sup> (years)	Source of Information	Potential Contaminants <sup>3</sup>
	Range Road	0-3	GIS Map	IOC, VOC, SOC, Microbes
	Waste Petroleum Land Farm	0-3	Sanitary Survey	VOC, SOC

<sup>1</sup> Find Source Description definitions on page 12

<sup>2</sup> TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

<sup>3</sup> IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

NOTE: The site number in this table corresponds to Figure 2, page 17.

## Attachment B

# Idaho National Guard Mates Facility Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

## Ground Water Susceptibility Report

Public Water System Name : IDAHO NATIONAL GUARD MATES FACILITY  
Public Water System Number 4010234

Well# : WELL #1

2/28/02 8:48:12 AM

1. System Construction		SCORE			
	Drill Date	1/29/92			
	Driller Log Available	YES			
	Sanitary Survey (if yes, indicate date of last survey)	YES	1998		
	Well meets IDWR construction standards	YES	0		
	Wellhead and surface seal maintained	YES	0		
	Casing and annular seal extend to low permeability unit	NO	2		
	Highest production 100 feet below static water level	YES	0		
	Well located outside the 100 year flood plain	YES	0		
Total System Construction Score			2		
2. Hydrologic Sensitivity					
	Soils are poorly to moderately drained	NO	2		
	Vadose zone composed of gravel, fractured rock or unknown	YES	1		
	Depth to first water > 300 feet	YES	0		
	Aquitard present with > 50 feet cumulative thickness	NO	2		
Total Hydrologic Score			5		
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
	Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2
	Farm chemical use high	NO	0	0	0
	IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
	Contaminant sources present (Number of Sources)	YES	1	2	2
	(Score = # Sources X 2 ) 8 Points Maximum		2	4	4
	Sources of Class II or III leacheable contaminants or	YES	1	2	1
	4 Points Maximum		1	2	1
	Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0
	Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		3	6	5	2
Potential Contaminant / Land Use - ZONE II					
	Contaminant Sources Present	NO	0	0	0
	Sources of Class II or III leacheable contaminants or	NO	0	0	0
	Land Use Zone II	Less than 25% Agricultural Land	0	0	0
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0
Potential Contaminant / Land Use - ZONE III					
	Contaminant Source Present	NO	0	0	0
	Sources of Class II or III leacheable contaminants or	NO	0	0	0
	Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		5	8	7	4
4. Final Susceptibility Source Score		8	9	8	9
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate